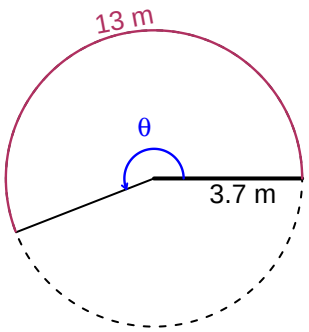
Name: Date:

Trig Final (Practice v24)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

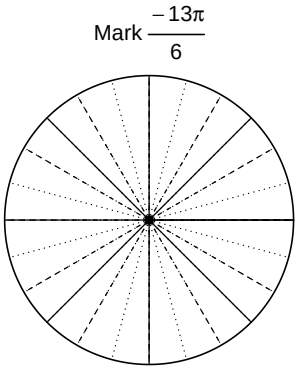
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 13 meters. The radius is 3.7 meters. What is the angle measure in radians?

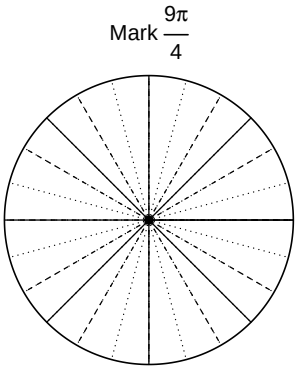


Question 2

Consider angles $\frac{-13\pi}{6}$ and $\frac{9\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-13\pi}{6}\right)$ and $\sin\left(\frac{9\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\cos(-13\pi/6)$



Find $\sin(9\pi/4)$

Question 3

If $\cos(\theta) = \frac{36}{85}$, and θ is in quadrant IV, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with a frequency of 5.59 Hz, a midline at $y = -7.51$ meters, and an amplitude of 4.53 meters. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).